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# The Health-Related Functions of Social Support

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*Social support research has been hampered by a lack of clarity both in the definitions of social support and in the conceptualization of its effects on health outcomes. The present study compared social network size and three types of perceived social support – tangible, emotional, and informational – in relation to stressful life events, psychological symptoms and morale, and physical health status in a sample of 100 persons 45-64 years old. Social network size was empirically separable from, though correlated with, perceived social support and had a weaker overall relationship to outcomes than did support. Low tangible support and emotional support, in addition to certain life events, were independently related to depression and negative morale; informational support was associated with positive morale. Neither social support nor stressful life events were associated with physical health. It was concluded that social support research would benefit from attention to the multidimensionality of support and greater specificity in hypotheses about the relationship between types of support and adaptational outcomes.*

**KEY WORDS:** social support; stressful life events; psychological symptoms; morale; health status.

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## INTRODUCTION

Scientific interest in the social environment as a source of stress has gradually broadened to include the social environment as a resource which mediates the relationship between stress and health. It is generally argued that people will fare better when faced with stressful life conditions if they have social support; conversely, lack of social support contributes to physical illness and psychopathology. Much of the impetus for current research on this has come from recent theoretical statements interpreting the health consequences of social disconnection (e.g., losing social ties because of death or separation, being unmarried, or being geographically or socioculturally mobile) in light of the "social support hypothesis" (Cassel, 1976; Cobb, 1976; Dean and Lin, 1977; Kaplan *et al.,* 1977; Syme, 1981). There are now a number of empirical studies in which low social support has been implicated in negative health outcomes including neurosis (e.g., Henderson *et al.,* 1978), complications of pregnancy (Nuckolls *et al.,* 1972), and all-cause mortality (Berkman and Syme, 1979).

Although they fall within the same general rubric, these and other published studies differ greatly in how they conceptualize and measure social support. This can be expected in a new area of research in which issues are not yet well formulated and instruments are not cross-validated. However, some of the most frequently cited studies treat social network, psychosocial assets, and perceived social support as interchangeable concepts, suggesting a more basic confusion about the nature of social support. This limits the extent to which existing findings can be integrated, the potential for well-designed future research, and the generalizations that can be made about the effects of social support.

Ultimately, careful distinctions have to be drawn among possible conceptions of social support and these must be explored in suitable research designs and assessments (Dean and Lin, 1977; LaRocco *et al.,* 1980; Satariano and Syme, 1980). Our purpose here is to make some distinctions and examine them in a study of the relationships among life events, social network size, various types of perceived social support, and outcome measures of morale, psychological symptomatology, and physical health status.

## SOCIAL SUPPORT VARIABLES

Perhaps the most important distinction to be made is between the number of relationships a person has and the person's perception of the supportive value of social interactions. The former is usually referred to as the social network; the latter, as perceived social support. The benefits of social relationships are assumed, not measured, in the social network concept, while in the concept of perceived social support an effort is made to assess the person's evaluation of the supportive quality of a relationship, either in general or in specific contexts. It will be helpful, both for clarity and as a preamble to our own research, to consider further the meaning of social network and perceived social support.

## The Social Network

Mitchell (1969) has defined the social network as the "specific set of linkages among a defined set of persons" or, alternatively, the set of relationships of a particular individual. A network can be described in terms of its composition and structure (e.g., the number of people involved and the number who know each other) or by the content of particular relationships (e.g., friendship vs kinship). Following Mitchell, Kaplan *et al.* (1977) suggested a number of properties of social networks which might be relevant to health, but thus far the only study of social networks and health outcomes used a measure of the size of the network (Berkman and Syme, 1979). In Berkman and Syme's study, a social network index consisting of marital status, numbers of close friends and relatives, and membership in community organizations predicted all-cause mortality rates in a large population followed for 9.5 years. Their research, which is methodologically superior to many other studies in the field, demonstrates the importance of social ties but leaves unanswered the question of *how* social ties affect health and whether it is social support rather than some other effect of relationships which is beneficial. Social ties, or course, may be beneficial for reasons other than the support they make available. For example, relationships with aged parents or very young children may not be perceived as sources of support, yet in order to meet the responsibilities inherent in such relationships, people might be motivated to manage their lives more effectively and to take explicit steps to protect their health. Therefore, being needed by others may in itself be an important asset, as suggested by Weiss (1968).

When structural measures of social network size are used to indicate the benefits of social relationships, two questionable assumptions are made, namely, that any benefits are directly proportional to the size and range of the network and that having a relationship is equivalent to getting support. The latter assumption also applies when a single social connection such as marriage or having a confidant is used (Lowenthal and Haven, 1968; Miller and Ingham, 1976). While it is likely that social network size and amount of social support are positively associated, this assumption ignores the demands, constraints, and conflicts also associated with social relationships. Indeed, the problems generated from significant social relationships comprise a significant share of the stresses people experience in their daily lives. The balance between the costs and benefits of social ties probably differs among persons, situations, and social roles.

There is evidence, for example, that marriage does not confer the same degree of protection from morbidity and mortality on women as it does on men (e.g., Ortmeyer, 1974; Ernster *et al.*, 1979). The costs of social ties are also evident in a large body of research literature identifying the family as a source of stress (Croog, 1970) and as a factor in the etiology of psychopathology (Liem and Liem, 1978). We draw the conclusion that it is important to examine the *quality* of social support as well as its availability, since quality may vary even within the same type of social relationship such as marriage.

## Perceived Social Support

This is distinguished from the more structural concept of network by its focus on the nature of the interactions taking place within social relationships, as these are evaluated by the person. Perceived social support involves an evaluation or appraisal of whether and to what extent an interaction, pattern of interactions, or relationship is helpful. This approach can be illustrated by two recent studies (Andrews *et al.*, 1978; Gore, 1978). Gore used a 13-item index to assess subjects' perception of the support given by wives, friends, and relatives, and examined its relationship to the health of 100 men who lost their jobs because of factory closings. She found that men who were not immediately reemployed and who felt unsupported had higher serum cholesterol and more symptoms of illness; unsupported men also experienced more depression regardless of employment status. Using a suburban Australian sample, Andrews *et al.* found that expectations of help in a crisis from friends, relatives, or neighbors were negatively correlated with psychological impairment but network-based measures of neighborhood interaction and community participation were not.

The major reason to distinguish between perceived social support and social networks is that they might have different effects on health, morale, and psychological functioning. To our knowledge, no population-based study had actually compared a structural measure such as size of the social network with an evaluative measure such as perceived support. It seems possible that perceived social support might be more strongly associated with health outcomes because it is a more direct measure of the support afforded a person, presuming that it is indeed support rather than some other aspect of social relationships which is important to outcomes. Social network measures, on the other hand, encompass many psychological processes within the same measure, not all of which may be positive in their adaptational consequences. Positive processes include being embedded in a network of persons who could provide diverse types of support when needed in specific stressful encounters or who provide meaning to one's life in general. Negative processes include the stressful demands made by others, the constraints they exercise over one's choices, the efforts required to sustain the network, and the disappointments often inherent in such relationships when help is needed but not provided.

The demands and constraints of network membership may dilute or vitiate the beneficial effects, and so weaken any relationship with health outcomes. Social networks might also be viewed as potential sources of support, which may or may not be called upon, depending on the person's attitudes toward accepting help or access to alternative coping strategies. A study which included both structural and evaluative measures of support would be useful for answering the question of whether the individual's appraisal of the supportiveness of his or her relationships adds to the power of social networks to explain symptoms of illness.

## Types or Functions of Social Support

Most investigators of social support have assumed that it is the emotional support or feelings of intimacy derived from social ties which are important to health and well-being. Yet social support can have a number of independent components serving a variety of supportive functions. Weiss (1974) suggests six "provisions of social relationships [necessary] to maintain psychological well-being: Attachment, social integration, opportunity for nurturance, reassurance of worth, a sense of reliable alliance, and obtaining guidance." This list conspicuously omits material aid and services. Reminiscent of Parsons' (1951, 1972) analysis of social roles, Dean and Lin (1977) have identified two functions of support, expressive and instrumental, but regard the expressive as more important. Other writers have made similar suggestions but have not applied the distinctions empirically (Kaplan *et al.,* 1977; Bloom, 1978; Gore, 1978). Virtually all studies of social support emphasize the attachment and affiliative functions of support over the instrumental, material, or social integration functions (Brown *et al.,* 1975; Cobb, 1976; Dean and Lin, 1977; Henderson *et al.,* 1978). As a result, we have no information about the importance of different types or functions of support for the health outcomes studied.

We believe it is useful to assess the emotional, tangible, and informational support functions separately and to assess their interrelationships. *Emotional* support includes intimacy and attachment, reassurance, and being able to confide in and rely on another—all of which contribute to the feeling that one is loved or cared about, or even that one is a member of the group, not a stranger. *Tangible* support involves direct aid or services and can include loans, gifts of money or goods, and provision of services such as taking care of needy persons or doing a chore for them. *Informational* support includes giving information and advice which could help a person solve a problem and providing feedback about how a person is doing. Cassel (1976) has speculated that such a feedback may help a person maintain a social identity and a sense of social integration. Tangible and informational support may also serve an emotional support function, as when they signal caring and are not viewed as resulting from obligation.

As with the distinction between social networks and perceived social support, the importance of distinguishing among different types of support lies in the possibility that they may have independent effects on health and psychological functioning. Each might produce different outcomes because the functions are not necessarily interchangeable in utility. This should be evident to anyone who has received emotional support in the form of a sympathetic word when what was really needed was some tangible aid such as a ride to an appointment or help with child care. Some stressful situations may be better resolved by a loan or by services than by the offer of emotional support, whereas other stresses such as a blow to self-esteem or social esteem may be better managed by indications of positive regard or affection than through any tangible help. Demonstrations of one's social value can help bolster self-esteem and make the person less vulnerable to depression, as well as contribute to joy or happiness regardless of stress, thus enhancing health and the sense of well-being (Lazarus *et al.,* 1980). As Gore (1978) and others (Folkman *et al.,* 1979) have suggested, emotional support may also encourage a person to sustain, redouble, or renew coping efforts that increase the likelihood of stress management or mastery. Furthermore, informational support may affect adaptational outcomes by suggesting alternative solutions to a problem or help a person reappraise a situation in the direction of stress reduction; for example, it may encourage the idea that nothing could have been done, that the stressful event is not as significant as originally assumed, that the person need not feel any responsibility (e.g., LaRocco *et al.,* 1980). In sum, the mode of operation and its effect on outcomes may differ with the type of support involved. For this reason, there is potential value in developing measures capable of distinguishing multiple functions of social support.

## LOSS AND NONLOSS STRESSFUL EVENTS

The widely respected notion that social support has a stress-buffering function requires the demonstration of an interaction between support and stress, but several investigators using life events as a measure of stress have failed to find such an interaction (Andrews *et al.,* 1978; Lin *et al.,* 1979). The issue remains unresolved and the evidence mixed (LaRocco *et al.,* 1980). In research using life events lists, stress and social support are badly confounded, which might help explain the difficulty. The most heavily weighted items on all life events lists involve losses of social ties due to, for example, death, loss of job, and divorce. Thus, in such research persons with low levels of social support are also apt to be persons who are undergoing the severe stress of loss. Recent separation or bereavement is a profound source of stress whose import, of course, goes far beyond the loss of potential social support. Moreover, the psychological distress and dislocation in everyday living caused by such separation and loss may differ importantly from the effects of being deprived of such relationships. Lowenthal (1964), for example, found that women who had been long-term social isolates were less likely to require institutionalization or to be psychologically impaired than those recently widowed.

The point is that when low social support or few social ties are the result of recent loss events, it is impossible to tell whether resulting poor health is due to the effects of loss or to the lack of support itself. Thus, investigators who think they are studying the effects of small social networks or low perceived support may actually be studying the effects of recent separation or bereavement, that is, stress itself. Since the persons categorized as low in social support may have also experienced greater stress, this confounding could have disguised or washed out any interaction between stress and social support, in effect obscuring the stress-buffering process. Until this confounding is removed in research on the problem, the stress-buffering hypothesis can be neither rejected nor confirmed. The present research provides an opportunity to separate life events into those involving loss from the social network—and hence support—and those not directly affecting significant relationships with others.

The two main issues developed above, namely, that it is useful to distinguish between perceived social support and social network variables and that various types of perceived social support and life events affect health differently, comprise the basic themes for the analyses presented below. If one can speak of hypotheses, they call for the demonstration of a degree of independence among the social support variables and a differential capability to predict health outcomes. Overall, the research on which the subsequent analyses are based has been guided by a theoretical perspective which emphasizes the role of cognitive appraisal and coping in shaping the course and outcome of stressful encounters during the course of living (Lazarus and Launier, 1978; Coyne and Lazarus, 1980; Lazarus, 1981).

## METHOD

The data on social support presented here were collected as part of a yearlong study of patterns of stressful events, coping, and adaptation in middle-aged persons. It employed a sample of 100 men and women 45–64 years old living in Alameda County, California. Participants were selected from among subjects in a previous population survey conducted by the Human Population Laboratory (HPL) of the California State Health Department.[3] The first survey of 6928 adults was conducted in 1965; 4864 of these people were resurveyed by HPL in 1974. Participants for the present study were selected from among those restudied in 1974. They were drawn from a subject pool limited to those 45-64 years of age, white, Protestant or Catholic, with at least an eighth-grade education, with a better than marginal income ($7,000 or above in 1974), and without the most severe disabilities (i.e., not bedridden). Randomly selected subjects fitting the above selection criteria were contacted by phone. Of the resulting 216 initial contacts, 107 refused to participate; 109 agreed to be studied. The 107 persons who refused differed significantly from those who agreed only in education, with those who refused including more persons with a high-school education or less ($\chi^2 = 11.21$, df $= 3$, $p < 0.02$). The 109 persons who agreed to participate were distributed very similarly to the 4864 members of the HPL cohort paired on each of the selection variables listed above, except that, according to the HPL categorization, a larger number of our participants had more than adequate incomes (in 1974) than did the HPL sample as a whole.

Nine participants later dropped out, leaving 100 (48 men, 52 women) who completed the 12-month study. Age was stratified into four 5-year periods: 45–49 ($N = 27$), 50–54 ($N = 25$), 55–59 ($N = 24$), and 60–64 ($N = 24$). The sample was predominantly married ($N = 86$), well educated (mean, 13.7 years of education), and of high income (median, > $20,000 per year), as is the white, 45- to 64-year-old population of Alameda County. Although the 1965 HPL sample was considered to be representative of the community, our subsample of the 1974 follow-up probably overrepresents those who are stably employed and located, since these people were studied in 1965 and 1974 and were willing to be studied further by us in 1977.

Participants were interviewed in their homes once a month for 12 months and were left self-report questionnaires for completion at specified times between interviews. Only the results of certain questionnaires are presented in this paper. With the exception of the Social Network Index, the questionnaires used were obtained twice, near the beginning and end of the study period.

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[3] The authors gratefully acknowledge the generous help provided by the Human Population Laboratory in facilitating this research.

The data reported here come from six questionnaire sources: the Social Support Questionnaire, the Social Network Index, the Recent Life Events Questionnaire, the Hopkins Symptom Checklist, the Bradburn Morale Scale, and the Health Status Questionnaire.

## Measures

*Social Support Questionnaire*[4]. This instrument was designed to measure separately the emotional, tangible and informational functions of social support. It was administered verbally by the interviewer during the third and twelfth interviews. In the section concerned with tangible support, participants were asked if there was someone to whom they could go for help in nine different situations in which support would be required. The situations ranged from minor (being able to borrow a cup of sugar) to major and demanding ones, such as needing care following an illness or injury. Also included were instances in which the participants received helpful information in finding a job or buying a car, as suggested by Granovetter's (1973) work. The participant's tangible score was the number of incidents in which he or she could count on tangible support from another person.

The second section of the questionnaire was designed to measure informational and emotional support. This section asked participants to list their spouse, close friends, relatives, co-workers, neighbors, and supervisors. The participants rated each person on the list on a 1 – 5 scale (1 = not at all, 5 = extremely) for each of five separate questions:

(1) How much did this person give you information, suggestions, and guidance over the last month that you found helpful?
(2) How reliable is this person? (Is this person there when you need him/her?)
(3) How much does this person boost your spirits when you feel low?
(4) How much does this person make you feel he/she cares about you?
(5) How much do you feel you can confide in this person?

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[4] The first section of the questionnaire was developed by the staff of the Stress and Coping Project, particularly Lisa Berkman, Margaret Boyd, Judith Cohen, Catherine Schaefer, and Bernice VanDort. The second section of the questionnaire was adapted virtually without change from the Dimensions of Social Support Scale, developed by Frances Cohen, University of California, San Francisco. We thank her for allowing us to include her scale in our measure.

Participants' informational support score was the sum of their ratings on each person listed in response to the first question concerning information and guidance. On examination, ratings on the remaining four questions were all highly related to one another (average $r > 0.93$), and so the four questions were considered as components of emotional support rather than separate factors in themselves. Participants' emotional support score was the sum of all their ratings across the four components of emotional support.

*Social Network Index.* During the tenth month of the study, participants answered a set of questions which allowed us to duplicate the measure of social network used by Berkman and Syme (1979) in their study of the complete HPL cohort. These questions combine information on marital status, number of close friends and relatives, frequency of contact, and membership in clubs and community organizations to yield a measure of social network. The questions were part of a questionnaire given as homework between interviews.

*Life Events Questionnaire.* The questionnaire was developed in 1974 by Paul Berkman at HPL from in-depth interviews of the recent life stresses reported by a sample of 100 (different) respondents from the HPL cohort. It contained 24 items, none of which would ordinarily be considered desirable events, and in our study it was administered at the first and tenth interviews. In order to examine the question of whether recent losses might be associated with low social support, the list of events was divided into (a) those directly involving the loss or severance of a social tie and (b) those not involving such loss. Loss events included deaths, marital separation or divorce, change of residence, and loss of job. Nonloss events included the illness or injury of children or other close relatives, auto accidents, burglaries, deteriorating neighborhoods, other marital problems, job problems, serious financial difficulties, and events other than health-connected which were bad for children, spouse, or close relatives. Two events, serious personal injury or illness and sexual problems or difficulties, were dropped from the scores used in analysis with the Hopkins Symptom Checklist and the Health Status Questionnaire because of their possible confounding with health and psychological symptoms. The list used in this study also excluded changes in eating, sleeping, or other habits which previous critiques of life events research had suggested might be prodromal signs of illness, producing spurious associations between life changes and symptom onset (Dohrenwend, 1974). Those events endorsed by subjects as occurring during the 2.5 years preceding the study, or during the course of the study, were assigned weights as published for the Schedule of Recent Experience (Holmes and Rahe, 1967). Events on our list which were not identically worded to those items on the schedule were assigned weights based on their scaling by a group of public-health graduate students (mean age, 35 years) in a scheduled class.

*Hopkins Symptom Checklist (HSCL).* This self-report inventory is widely regarded as a reliable and valid measure of neurotic symptoms (Derotis *et al.,* 1970, 1971, 1974). It was chosen for the present study because of its demonstrated sensitivity to low levels of symptoms in normal populations (Rickels *et al.,* 1972; Uhlenhuth *et al.,* 1974), and it was given to the participants as homework following the second and tenth interviews.

*The Bradburn Morale Scale.* This widely used measure of psychological well-being (Bradburn and Caplovitz, 1965; Bradburn, 1969; see also Wilson, 1967; Campbell, 1976; Costa and McCrae, 1980a; Kanner *et al.,* 1980) has two subscales of positive and negative morale which have consistently been shown to be relatively independent and to have different correlates. The version used in the present study is the one described by Bradburn and Caplovitz.

*The Health Status Questionnaire.* This self-report questionnaire was adopted with minimal modifications from that used by HPL in their 1965 and 1974 surveys. It includes information on a wide variety of chronic conditions and specific somatic symptoms, as well as questions concerning disability in working, eating, dressing, or being able to move around. There are also several questions assessing subjects' perceived energy levels. Subjects are placed in one of seven categories, according to their most serious health problem. That is, a subject with both a chronic, diagnosed health problem (e.g., hypertension) and somatic symptoms (e.g., chest pain when exercising) will be classified with those having a chronic condition. Meltzer and Hochstim (1970) found the questionnaire acceptably reliable and valid in a comparison with medical records. Further validation of the questionnaire is provided by Wingard's (1980) finding that it predicted mortality from all causes in the complete HPL cohort, with a relative risk of 3.0 for the least healthy compared with the most healthy, in 9.5 years of follow-up. In the present study, the questionnaire was mailed to participants and collected at the first interview; the second administration was completed as homework at the tenth interview.

## RESULTS

### Relationships Among Social Support Variables

Product—moment correlations among the various measures of support are reported in Table I. The Social Network Index is modestly

**Table I.** Intercorrelations Among Measures of Perceived Social Support at Months 3 and 12 and the Social Network Index at Month 10[a]

| | Variable | | | |
|---|---|---|---|---|
| | Month 3 | | | Month 10 |
| | (1) | (2) | (3) | (4) |
| Month 12 | | | | |
| Type of support | | | | |
| (1) Emotional | 0.663*** | 0.177 | 0.845*** | 0.361*** |
| | (92)[b] | (89) | (96) | (92) |
| (2) Tangible | 0.171 | 0.555*** | 0.195 | 0.103 |
| | (92) | (87) | (90) | (88) |
| (3) Informational | 0.787*** | 0.197 | 0.581*** | 0.252* |
| | (94) | (93) | (94) | (93) |
| Month 10 | | | | |
| (4) Social Network Index | 0.238* | −0.028 | 0.219* | 1 |
| | (91) | (90) | (93) | (94) |
| Month 3[c] | | | | |
| $X$ | 134.92 | 6.09 | 24.01 | 6.49 |
| SD | 52.77 | 1.54 | 11.48 | 2.95 |

[a] The diagonal coefficients are test–retest values, except for the Social Network Index, which was administered only once. Above the diagonal are the intercorrelations of Month 3 scores; below are the intercorrelations of Month 12.

[b] $N$ for the correlation coefficient. $N$s vary due to missing data.

[c] Month 12 is very similar.

$*P < 0.05$.

$**P < 0.001$.

correlated with measures reflecting participants' evaluations of the extent of support (i.e., perceived social support). Emotional support and informational support are highly correlated, but neither is strongly related to tangible support. Overall, the results argue against accepting the Social Network Index as an alternative measure of perceived support and suggest that social support is not a unitary concept.

The measures of social support show considerable stability over the 9 months between administrations, with test–retest correlations ranging from 0.56 ($p < 0.001$) for tangible support to 0.66 ($p < 0.001$) for emotional support.

Internal consistency of the subscales was assessed using coefficient alpha (Cronbach, 1951). Informational and emotional support both showed considerable internal consistency, with coefficient alphas of 0.81 for the 16-item informational support scale at Month 3 and 0.95 for the 64-item emotional support scale. Coefficient alpha for the 9-item tangible support scale was only 0.31. Examination of its interitem correlations showed no consistent pattern of relationships. Correlation of the individual items with other variables (e.g., psychological symptomatology) showed that no single item, or combination of items, was responsible for the sometimes substantial relationships with these variables.

In deciding to retain the tangible support score despite its lack of internal consistency, we were persuaded that a measure of tangible support had adequate test–retest reliability, that it was theoretically relevant, and that the items involved could rationally be included in the same score. In addition, we reasoned that this measure of tangible support is unlike the unidimensional concepts to which such psychometric criteria are usually applied, in that it is a collection of probably independent situations in which one would or would not receive tangible support. Nonetheless, results reported for the tangible support measure should be regarded cautiously, and future research unsing a tangible support measure should seek to improve its internal consistency, an objective which might be achieved simply by adding more questions to our present list of nine.

The effects of age, sex, employment status, income, and education on social support and social network size were examined using multiple regression analyses. No main or interaction effects were found for emotional or informational support or for the Social Network Index; demographic variables accounted for no more than 2% of the variation in these measures. For tangible support, the demographic variables also produced no main effects, but interactions among the variables accounted for a statistically significant 13% of the variance ($F = 1.85$, df = 15,76, $p = 0.040$.) None of the individual interaction effects was significant, although the interaction of age and employment status approached significance ($F = 3.63$, df = 1,76, $p = 0.06$). Examination of the means revealed that older persons who were unemployed had lower tangible support.

## Social Support Variables and Loss vs Nonloss Life Events

As we have noted, life events lists often include items which in themselves represent reductions in the size of the person's social network (e.g., bereavement and separation) and presumably entail a loss of support. In order to examine this potential confound, life events scores involving loss and nonloss events were separately correlated with social network and support scores. Correlations with nonloss events were not significant. Loss events occurring before the study and the Social Network Index were significantly correlated ($r = -0.24$, $p \leq 0.05$), and loss events during the study and informational support at Month 12 were also correlated ($r =$

$-0.24$, $p < 0.05$). Loss events were also inversely correlated with other support measures, although not significantly so.

## Social Support Variables, Life Events, Stress, and Adaptational Outcomes

These relationships were examined from two perspectives. First, cross-sectional analyses were performed to examine whether there was a correlation. Second, a more prospective examination was made in order to observe whether the correlation was maintained over time. Figure 1 diagrams these relationships, with an accompanying time line to clarify the timing of the various questionnaires. Figure 1A represents the cross-sectional relationships, while Fig. 1B represents the prospective relationships. Although the second life events measure appears cross-sectional with reference to the second set of outcome measures, it is actually a measure of the events occurring during the preceding 10 months of the study.

For the relationships denoted in Fig. 1A, the correlation matrix (Appendix) shows that life events are correlated significantly only with positive and negative morale; the size of the correlation with other outcomes is consistent with that typically reported in life events studies (Rabkin and Struening, 1976). The perceived social support scores are significantly correlated only with depression scores from the Hopkins Symptom Checklist (HSCL) and with positive and negative morale from the Bradburn Scale.[5] Neither life events nor support variables of any kind are significantly associated with physical health status. The specificity of the relationship between support and depression is noteworthy given the current interest in the relationship between depression and the social environment (Coyne, 1976a,b; Vaughn and Leff, 1976).

Multiple regression analyses were performed to assess the overall relationship of perceived social support at the third month and life events (occurring prior to the study) to depression and morale at the third month. The results are presented in Table II. In the case of depression, the overall relationship is highly significant and accounts for 20% of the variance. Tangible support and emotional support are both significant predictors of

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[5] Negative morale and depression are strongly correlated (average $r = 0.53$) but are not the same concept. The depression scores from the HSCL represent more severe symptomatology than do the negative morale scores. Positive morale is only moderately correlated with negative morale (average $r = -0.21$) and depression (average $r = -0.17$).

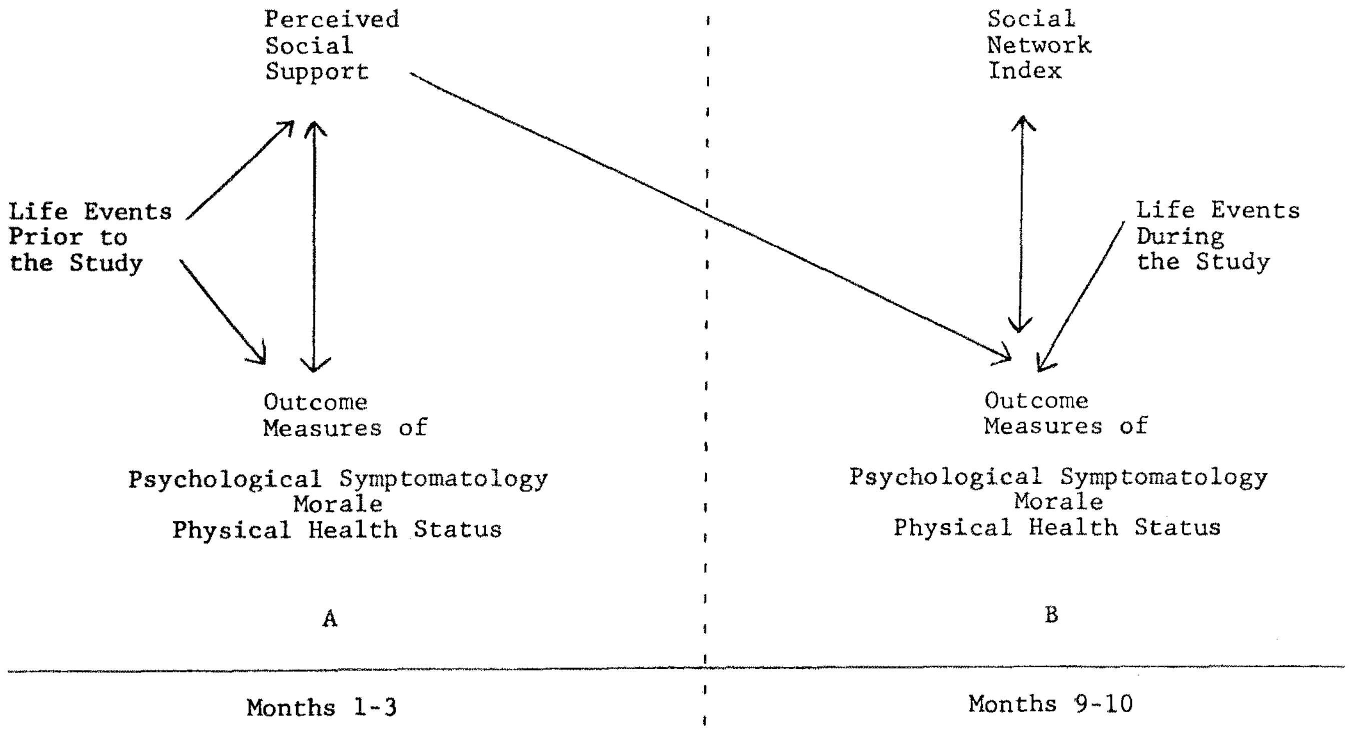

**Fig. 1.** Cross-sectional and prospective relationships among perceived social support, life events, and outcome measures of physical health, psychological symptoms, and morale.

depression ($\beta = -0.33$, $p = 0.01$, and $\beta = -0.38$, $p < 0.05$, for tangible and emotional support, respectively). Neither life events involving loss of social ties nor other types of events contribute significantly to the explained variance in depression. In analyses of morale, the overall relationships are also highly significant, accounting for 22% of the variance in negative morale and 14% of the variance in positive morale. Unlike the results for depression, nonloss life events significantly predict both negative and positive morale. Of the various perceived social support measures, only tangible support contributes significantly to the explained variance in negative morale. Informational support is positively rather than inversely associated with depression and negative morale, although not significantly.

These data show that, generally, perceived social support is inversely correlated with depression and negative morale. The positive correlation of informational support with depression and negative morale is probably due to the overlapping variance with emotional and tangible support, which when partialed out, leaves residual informational support positively related to these negative outcomes. The partial correlation of informational support with depression when emotional support and tangible support are controlled is 0.14 (df = .81, $p = 0.22$).

In order to examine the question of whether these relationships would be maintained with the passage of time and other events, we examined the relationships of social support variables with outcome measures obtained later (Month 10) in the study. Included in these analyses are the measures of perceived social support obtained at the third month of the study, the Social

**Table II.** Standard Multiple Regression Analyses of Depression at Month 2, Bradburn Morale Measures at Month 3 on Life Events Preceding the Study, and Social Support at Month 3

| | Depression | | Negative morale | | Positive morale | |
|---|---|---|---|---|---|---|
| Overall | $R^2 = 0.20$<br>$F = 4.19$*<br>df = 5,82[a] | | $R^2 = 0.22$<br>$F = 4.19$*<br>df = 5,75 | | $R^2 = 0.14$<br>$F = 2.61$**<br>df = 5,80 | |
| Individual Variables | $\beta^b$ | $F$ to remove | $\beta$ | $F$ to remove | $\beta$ | $F$ to remove |
| Loss events 5 | 0.052 | 0.2 | −0.150 | 1.88 | 0.045 | 0.17 |
| Nonloss events | 0.129 | 1.61 | 0.351 | 10.93*** | −0.218 | 4.19* |
| Tangible support | −0.332 | 10.39** | −0.247 | 5.42* | 0.146 | 1.82 |
| Emotional support | −0.378 | 4.68* | −0.316 | 3.25 | 0.112 | 0.40 |
| Informational support | 0.246 | 1.99 | 0.300 | 2.91 | 0.145 | 0.66 |

[a] Degrees of freedom vary due to missing data.

[b] Standardized regression coefficients.

*$P < 0.05$.

**$P < 0.01$.

***$P < 0.001$.

Network Index obtained at the tenth month of the study, life events occurring during the course of the study, the outcome measures of psychological symptomatology and physical health status obtained at the tenth month of the study, and morale measured at the ninth month of the study. These comprise the set of relationships portrayed in Fig. 1B.

Again there are no significant correlations (see Appendix) with physical health status. Depression from the HSCL, as well as negative and positive morale, continues to be significantly correlated with the earlier obtained social support variables and with preceding nonloss life events.

Multiple regression analyses of these relationships are reported in Table III. The combination of life events occurring during the study and social support variables accounts for a significant 23% of the variance in depression and 18% of the variance in negative morale. Nonloss life events contribute significantly to the explained variance of both outcome measures. Of the types of support, lack of tangible support is also significantly correlated with both depression ($\beta = -0.20$, $p < 0.05$) and negative morale ($\beta = -0.22$, $P < 0.05$). Although not statistically significant ($\beta = -0.31$, $P < 0.10$), emotional support is also inversely correlated with depression and not strongly associated with negative morale. Informational support is again positively correlated with depression, is unrelated to negative morale, and is the single significant independent predictor of the explained variance in positive morale ($\beta = 0.39$, $P < 0.05$).

The Social Network Index is strongly and positively associated with depression ($\beta = 0.27$, $P < 0.05$). As with the positive relationship between

**Table III.** Standard Multiple Regression Analysis of Depression and Morale on Prior Social Support and Life Events Occurring during the Study

| | Depression | | Negative morale | | Positive morale | |
|---|---|---|---|---|---|---|
| Overall | $R^2 = 0.23$<br>$F = 3.89^{**}$<br>df = 6,80$^a$ | | $R^2 = 0.18$<br>$F = 2.61^*$<br>df = 6,73 | | $R^2 = 0.22$<br>$F = 3.51^{**}$<br>df = 3,76 | |
| Individual Variables | $\beta^b$ | $F$ to remove | $\beta$ | $F$ to remove | $\beta$ | $F$ to remove |
| Loss events | 0.158 | 2.40 | 0.003 | 0.00 | 0.031 | 0.09 |
| Nonloss events | 0.226 | 6.98** | 0.238 | 4.79* | 0.043 | 0.17 |
| Tangible support | −0.199 | 3.92* | −0.215 | 3.90* | 0.146 | 1.97 |
| Emotional support | −0.314 | 3.03 | −0.139 | 0.49 | 0.009 | 0.00 |
| Informational support | 0.136 | 0.62 | 0.003 | 0.00 | 0.386 | 4.38* |
| Social Network Index | 0.274 | 5.82* | −0.138 | 1.22 | 0.051 | 0.18 |

$^a$Degrees of freedom vary due to missing data.
$^b$Standardized regression coefficients.
$^*P < 0.05$.
$^{**}P < 0.01$.

informational support and depression in the earlier analysis, the correlation of network size with depression undoubtedly reflects the relationship of social network and the various types of perceived social support, since the zero-order correlation of network with depression is close to zero ($r = 0.09$, $p =$ NS). However, the partial correlation of social network with depression, controlling for emotional and tangible support, is 0.23 (df = 81, $p = 0.03$). The positive correlation of network with depression may indicate that the former contains demands and constraints which increase depression, in addition to positive support which is represented by the measures of tangible and emotional support in the regression equation.

These analyses show that in both cross-sectional and prospective analyses, tangible support and emotional support are consistently inversely associated with depression and negative morale. Lack of change in the depression measure over the course of the study ($r = 0.71$, $p < 0.001$) makes it difficult to show that levels of social support are connected with changes in symptomatology. Accounting for change in depression or morale would be an even more persuasive demonstration that low social support leads to depression and poor morale than is the demonstration here of stability and consistency.[6] However, it should be noted that neither perceived social support (at Month 12) nor social network size (at Month 10) is significantly predicted by the combination of life events and earlier symptomatology or morale. This lends some further support to our ordering of the variables with depression and morale dependent, and argues against the idea that the relationship of support with depression results from the effects of psychological symptomatology on interpersonal relationships.

Finally, we also investigated the possibility that perceived social support may buffer the illness- or symptom-inducing effects of life event stress. Evidence of the stress-buffering effect of support usually rests on demonstrating that social support and life events interact in their effects on symptoms or health. We looked for such an interaction by constructing separate product terms for each of the social support variables in combination with the life event variables and entering these terms as the last step in the regressions of symptoms or health on life events and support. We found that no single interaction term, or any combined set, accounted for any significant amount of variation in either the earlier or the later measures depression, morale, or physical health. In this sample, social support was directly associated with depression and negative morale but did not appear to mediate the effects of life events on these outcomes.

[6] The results of a hierarchical stepwise regression analysis of depression at Month 10, in which depression at Month 2 was controlled for as the first step, showed that the combination of nonloss life events and social support predicted a significant amount of the residual variance, although the effect was apparently due to the influence of the nonloss events, rather than social support.

## DISCUSSION AND CONCLUSIONS

With respect to the comparison of social networks with perceived social support, the data presented clearly support our reasoning that these represent empirically separable variables which have different relationships to psychological functioning. Overall, perceived social support variables showed stronger associations with both symptomatology and morale than the Social Network Index. This finding appears to confirm that it is social support rather than some other aspect of social relationships which is important to depression and morale.

In the regression analyses reported, social network size was associated with depression. There are several possible interpretations of this finding. It seems unlikely that a person's social network would increase in size in response to depression, but perhaps more contacts with family and friends (included in the network measure) might occur in response to depression. Alternatively, social network membership may involve many elements in addition to support, and some of these elements (e.g., demands, constraints, interpersonal strife) might dilute the positive effects of support, leading to a weaker association with adaptational outcomes. Taking into account the effects of tangible and emotional support, the positive relationship of social network with depression may indicate the mixed blessings of network membership.

It should be noted that the same Social Network Index has been used by Berkman and Syme (1979), who found that larger social networks were associated with lower all-cause mortality rates. Our failure to find social network size to be associated with lower psychological symptomatology could imply merely that psychological symptoms do not have the same immediate antecedents as all-cause mortality. However, if Berkman and Syme had measured social support, they might have found that its relationship to mortality was greater than that between the Social Network Index and mortality.

The desirability of breaking down the generic concept of social support into emotional, tangible, and informational components has often been suggested, as we noted at the outset. However, most current investigators (Henderson *et al.,* 1978; Lin *et al.,* 1979; LaRocco *et al.,* 1980) have assumed that emotional support, or the feelings provided by network membership, would be more significant than tangible aid or services in determining health outcomes and psychological functioning. Our findings tend to contradict this assumption. Tangible support was significantly but inversely correlated with depression and negative morale.

The above finding should be considered in light of the fact that our measure of tangible support, which involves the perceived availability of help in specific emergencies, actually overlaps with measures of crisis support. Andrews *et al.* (1978) reported that crisis support was inversely related to psychological symptomatology, whereas amount of social interaction was unrelated. Brown *et al.* (1975), Gore (1978), and Lowenthal and Haven (1968) measured support as aid in specific, difficult circumstances involving severe life events, job loss, and conjugal bereavement, as we did. When measured with respect to the requirements of specific stressful contexts, perceived social support may be a more direct indication of stress-buffering than the commonly accepted technique of analyzing interaction effects with life events. A better measure of tangible support, with improved internal consistency and a broader sampling of content, is necessary to assess this further. Nevertheless, our findings certainly point to tangible support as a separate support function having potentially substantial implications for health and well-being.

Whereas the functions of tangible support may be more important than was previously assumed by most investigators, emotional support seems to have separate but almost equally important functions in reducing or averting depression. In comparison, informational support was not a factor in depression or negative morale. All the social support variables were correlated with positive morale, perhaps suggesting that one of the functions of social support is to provide pleasant experiences, which themselves may provide an antidote to or balance negative morale and depression (Bradburn and Caplovitz, 1965).

Unlike previous studies of bereavement and other life events involving the loss of social ties, loss-type life events were not associated with depression, negative morale, or physical health in our data. This may have been because there were so many fewer events of this type than of those not involving loss. The latter (nonloss events), not the former, were significantly associated with both depression and negative morale. The prevalence of major life events such as bereavement or divorce has been found to be normally quite low (Goldberg and Comstock, 1980), and it was low in our middle-aged sample as well. As expected, loss-type events were inversely associated with social support and social network size, although only a few of the correlations were statistically significant. The significant correlations of social support with depression and morale, when the effects of recent losses were controlled, clearly indicate the independence of the effects of low levels of perceived social support from those of loss of social ties.

Our data did not support the hypothesis that social support is beneficial because it mediates the effects of stressful events. Instead, we found that perceived social support and nonloss life events had direct and additive effects on levels of depression and morale. It would be premature to conclude that perceived social support does not buffer the illness-inducing effects of stress, but these effects may be more evident when support is assessed with respect to the demands of specific stressful occurrences (i.e., as crisis support), as we suggested may be true for tangible support in the present study.

Our negative finding that none of the social support variables was significantly correlated with physical health status deserves comment, since it has been widely assumed that social support plays a role in physical as well as mental health (Cassel, 1976; Cobb, 1976; Dean and Lin, 1977; Kaplan *et al.,* 1977; Syme, 1981). We note that many studies which have reported associations between physical health and social support have used psychophysiological symptoms or somatic complaints as measures of physical health (Miller and Ingham, 1976; Gore, 1978; LaRocco *et al.,* 1980). These symptom measures may overlap greatly with measures of psychological functioning, and this overlap could account for the findings reported (Costa and McCrae, 1980b). Our own measure of physical health status includes chronic conditions and physical disability and is not highly correlated with depression or morale. As an exception to studies of symptoms, Berkman and Syme (1979) found that social network size was propectively associated with all-cause mortality rates in the complete HPL cohort. The larger the number of social ties, the lower were the mortality rates. Their study controlled for a number of potentially confounding variables, such as socioeconomic status and health-related behaviors, but they could not assess how social network size was affected by recent deaths or separations, which might have contributed to the effects. And, unlike our much smaller sample, the complete HPL cohort includes social isolates who have very few or no social ties. It may be that only persons with very few social ties (i.e., zero, one, or two) are at significantly greater risk of physical illness or mortality, while psychological outcomes are associated with flux in the quality of perceived social support.

Finally, the point we want most to emphasize—one that is consistent with our findings—is that there is a pressing need for social support researchers to refine their hypotheses and theories beyond global statements that social relationships somehow protect against all psychological and physical health problems. Our findings were obtained with a small, homogeneous sample of middle-aged, middle-class people in whom the prevalence of severe psychological symptomatology was very low. Yet we found that several functions of social support consistently, and quite specifically, affected psychological functioning, particularly symptoms of depression. There is still a great deal to learn about the various forms and functions of support and how they work to lower or raise levels of distress and to facilitate or impair physical health. By specifying forms and functions of support in future research, we may be able to advance understanding of the role of social relationships in health and disease.

# APPENDIX: TABLE AI

**Table AI.** Correlations of Social Support and Life Events with Psychological Symptoms, Morale, and Physical Health Status

| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Months 1 – 3 | | | | | | | | | | |
| (1) Loss events | 1 | | | | | | | | | |
| (2) Nonloss events | 0.253* | 1 | | | | | | | | |
| (3) Emotional support | 0.144 | 0.059 | 1 | | | | | | | |
| (4) Informational support | 0.092 | 0.038 | 0.845*** | 1 | | | | | | |
| (5) Tangible support | −0.176 | −0.074 | 0.177 | 0.195 | 1 | | | | | |
| (6) Social Network Index | −0.238* | 0.070 | 0.361*** | 0.252* | 0.103 | 1 | | | | |
| (7) Depression | 0.144 | 0.174 | −0.182 | −0.086 | −0.368*** | −0.063 | 1 | | | |
| (8) Negative morale | −0.001 | 0.329** | −0.114 | −0.026 | −0.220* | −0.132 | 0.525*** | 1 | | |
| (9) Positive morale | −0.038 | −0.214* | 0.220* | 0.260* | 0.210* | 0.166 | −0.248* | −0.098 | 1 | |
| (10) Health status | −0.085 | −0.104 | −0.044 | −0.011 | 0.021 | 0.054 | −0.161 | 0.033 | 0.226* | 1 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Months 9 – 10 | | | | | | | | | | |
| (11) Loss events during study | 0.215* | −0.152 | −0.034 | −0.064 | −0.014 | −0.175 | 0.183 | 0.170 | 0.009 | −0.068 |
| (12) Nonloss events | −0.057 | 0.129 | 0.001 | 0.009 | −0.080 | 0.116 | 0.148 | 0.117 | −0.011 | −0.001 |
| (13) Depression | −0.000 | 0.134 | −0.082 | −0.027 | −0.242* | 0.092 | 0.713*** | 0.396*** | −0.134 | −0.252* |
| (14) Negative morale | 0.146 | 0.299** | −0.229* | −0.177 | −0.269* | −0.189 | 0.619*** | 0.464*** | −0.263* | −0.110 |
| (15) Positive morale | −0.149 | −0.046 | 0.334*** | 0.375*** | 0.202 | 0.235* | −0.270** | −0.056 | 0.549*** | 0.219* |
| (16) Health status | −0.164 | −0.234* | 0.024 | 0.010 | 0.164 | 0.027 | −0.356*** | −0.131 | 0.330** | 0.591*** |

| | (11) | (12) | (13) | (14) | (15) | (16) |
|---|---|---|---|---|---|---|
| Months 9 – 10 | | | | | | |
| (11) Loss events | 1 | | | | | |
| (12) Nonloss events | 0.088 | 1 | | | | |
| (13) Depression | 0.092 | 0.296** | 1 | | | |
| (14) Negative morale | 0.055 | 0.248* | 0.537*** | 1 | | |
| (15) Positive morale | −0.026 | 0.052 | −0.093 | −0.330*** | 1 | |
| (16) Health status | −0.121 | −0.038 | −0.353*** | −0.416*** | 0.310** | 1 |

*$P < 0.05$.
**$P < 0.01$.
***$P < 0.001$.

## REFERENCES

Andrews, G., Tennant, C., Hewson, D., and Schonell, M. (1978). The relation of social factors to physical and psychiatric illness. *Am. J. Epidemiol.* 108: 27-35.

Berkman, L. F., and Syme, S. L. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *Am. J. Epidemiol.* 109: 186-204.

Bloom, J. R. (1978). Social support, coping and adjustment to mastectomy. Paper presented at International Congress on Cancer, Buenos Aires, Argentina.

Bradburn, N., and Caplovitz, D. (1965). *Reports on Happiness: A Pilot Study of Behavior Related to Mental Health,* Aldine, Chicago.

Brown, G. W., Bhrölchäin, M. N., and Harris, T. (1975). Social class and psychiatric disturbance among women in an urban population. *Sociology* 9: 225-254.

Campbell, A. (1976). Subjective measures of well-being. *Am. Psychol.* 31: 117-124.

Cassel, J. (1976). The contribution of the social environment to host resistance. *Am. J. Epidemiol.* 104: 107-123.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosom. Med.* 38: 300-314.

Costa, P. T., and McCrae, R. R. (1980a). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *J. Personal. Soc. Psychol.* 38: 668-677.

Costa, P. T., and McCrae, R. R. (1980b). Somatic complaints in males as a function of age and neuroticism: A longitudinal analysis. *J. Behav. Med.* 3: 245-258.

Coyne, J. C. (1976a). Depression and the response of others. *J. Abnorm. Psychol.* 85: 186-193.

Coyne, J. C. (1976b). Toward an interactional description of depression. *Psychiatry* 39: 28-40.

Coyne, J. C., and Lazarus, R. S. (1980). Cognition, stress, and coping: A transactional perspective. In Kutash, I. L., and Schlesinger, L. B. (eds.), *Pressure Point: Perspectives on Stress and Anxiety,* Jossey-Bass, San Francisco.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika* 16: 542-548.

Croog, S. (1970). The family as a source of stress. In Levine, S., and Scotch, N. A. (eds.), *Social Stress,* Aldine, Chicago.

Dean, A., and Lin, N. (1977). The stress-buffering role of social support. *J. Nerv. Ment. Dis.* 169: 403-417.

Derogatis, L. R., Lipman, R. S., Covi, L., Rickels, K., and Uhlenhuth, E. H. (1970). Dimensions of outpatient neurotic pathology: Comparison of a clinical versus an empirical assessment. *J. Consult. Psychol.* 34: 164-171.

Derogatis, L. R., Lipman, R. S., Covi, L., and Rickels, K. (1971). Neurotic symptom dimensions: As perceived by psychiatrists and patients of various social classes. *Arch. Gen. Psychiat.* 24: 454-464.

Derogatis, L. R., Lipman, R. S., Rickels, K., Uhlenhuth, E. H., and Covi, L. (1974). The Hopkins Symptom Checklist (HSCL): A measure of primary symptom dimensions. In Pichot, P. (ed.), *Psychological Measurements in Psychopharmacology. Modern Problems in Pharmacopsychiatry, Vol. 7,* Karger, Basel.

Dohrenwend, B. P. (1974). Problems in defining and sampling the relevant population of stressful life events. In Dohrenwend, B. S., and Dohrenwend, B. P. (eds.), *Stressful Life Events: Their Nature and Effects,* Wiley, New York.

Ernster, V. L., Sacks, S. T., Selvin, S., and Petrakis, N. L. (1979). Cancer incidence by marital status: U.S. Third National Cancer Survey. *J. Nat. Cancer Inst.* 63: 567-585.

Folkman, S., Schaefer, C., and Lazarus, R. S. (1979). Cognitive processes as mediators of stress and coping. In Hamilton, V., and Warburton, D. M. (eds.), *Human Stress and Cognition: An Information-processing Approach,* Wiley, London.

Goldberg, E. L., and Comstock, G. W. (1980). Epidemiology of life events: Frequency in general populations. *Am. J. Epidemiol.* 111: 736-752.

Gore, S. (1978). The effect of social support in moderating the health consequences of unemployment. *J. Health Soc. Behav.* 19: 157-165.

Granovetter, M. S. (1973). The strength of weak ties. *Am. J. Sociol.* 73: 1360-1380.

Henderson, S. K., Byrne, D. G., Duncan-Jones, P., Adcock, S., Scott, R., and Steele, G. P. (1978). Social bonds in the epidemiology of neurosis: A preliminary communication. *Brit. J. Psychiat.* 132: 463-466.

Holmes, T. H., and Rahe, R. H. (1967). The social readjustment rating scale. *J. Psychosom. Res.* 11: 213-218.

Kanner, A. D., Coyne, J. C., Schaefer, C., and Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *J. Behav. Med.* 4: 1-39.

Kaplan, B.H., Cassel, J.,and Gore, S. (1977). Social support and health. *Med. Care* 15(5):47-58.

LaRocco, J. L., House, J. S., and French, J. R. P., Jr. (1980). Social support, occupational stress, and health. *J. Health Soc. Behav.* 21: 202-218.

Lazarus, R. S. (1981). The stress and coping paradigm. In Eisdorfer, C., Cohen, D., Kleinman, A., and Maxim, P. (eds.), *Theoretical Bases for Psychopathology,* Spectrum, New York.

Lazarus, R. S., and Launier, R. (1978). Stress-related transactions between person and environment. In Pervin, L. A., and Lewis, M. (eds.), *Perspectives in Interactional Psychology,* Plenum, New York.

Lazarus, R. S., Kanner, A. D., and Folkman, S. (1980). Emotions: A cognitive-phenomenological analysis. In Plutchik, R., and Kellerman, H. (eds.), *Theories of Emotion,* Academic Press, New York.

Liem, R., and Liem, J. (1978). Social class and mental illness reconsidered: The role of economic stress and social support. *J. Health Soc. Behav.* 19: 139-156.

Lin, N., Simeone, R. S., Ensel, W. M., and Kuo, W. (1979). Social support, stressful life events, and illness: A model and empirical test. *J. Health Soc. Behav.* 20: 108-119.

Lowenthal, M. F. (1964). Social isolation and mental illness in old age. *Am. Sociol. Rev.* 29: 54-70.

Lowenthal, M. F., and Haven, C. (1968). Interaction and adaptation: Intimacy as a critical variable. *Am. Sociol. Rev.* 33: 20-29.

Meltzer, J., and Hochstim, J. (1970). Reliability and validity of survey data on physical health. *Publ. Health Rep.* 85: 1075-1086.

Miller, P., McC., and Ingham, J. G. (1976). Friends, confidants and symptoms. *Soc. Psychiat.* 11: 51-58.

Mitchell, J. C. (1969). *Social Networks in Urban Situations,* Manchester University Press, Manchester, England.

Nuckolls, K. B., Cassel, J., and Kaplan, B. H. (1972). Psychosocial assets, life crisis, and the prognosis of pregnancy. *Am. J. Epidemiol.* 95: 431-441.

Ortmeyer, C. F. (1974). Variations in mortality, morbidity, and health care by marital status. In Erhardt, C. L., and Berlin, J. E. (eds.), *Mortality and Morbidity in the United States,* Harvard University Press, Cambridge, Mass.

Parsons, T. (1951). *The Social System,* The Free Press, New York.

Parsons, T. (1972). Definitions of health and illness in the light of American values and social structure. In Jaco, E. G. (ed.), *Patients, Physicians and Illness,* 2nd ed., The Free Press, New York.

Rabkin, J. G., and Struening, E. L. (1976). Life events, stress, and illness. *Science* 194: 1013-1020.

Rickels, K., Lipman, R. S., Garcia, C. R., and Fisher, E. (1972). Evaluating clinical improvement in anxious outpatients: A comparison of normal and treated neurotic patients. *Am. J. Psychiat.* 128: 119-123.

Satariano, W. A., and Syme, S. L. (1980). Life changes and diseases in elderly populations: Coping with change. In McGaugh, J., Kiesler, S., and Marsh, J. G. (eds.), *Biology, Behavior, and Aging,* Academic Press, New York.

Syme, S. L. (1981). Sociocultural factors and disease etiology. In Gentry, W. D. (ed.), *The Handbook of Behavioral Medicine,* Guilford, New York (in press).

Uhlenhuth, E. H., Lipman, R. S., Balter, M. B., and Stern, M. (1974). Symptom intensity and life stress in the city. *Arch. Gen. Psychiat.* 31: 759-764.

Vaughn, C. E., and Leff, J. P. (1976). The influence of family and social factors in the course of psychiatric illness. *Br. J. Psychiat.* 129: 125-137.

Weiss, R. S. (1968). Materials for a theory of social relationships. In Bennis, W. G., Schein, E. H., Steele, F. I., and Berlew, D. E. (eds.), *Interpersonal Dynamics: Essays and Readings on Human Interactions,* 2nd ed., Dorsey, Homewood, Ill.

Weiss, R. S. (1974). The provisions of social relationships. In Rubin, Z. (ed.), *Doing Unto Others,* Prentice-Hall, Englewood Cliffs, N.J.

Wilson, W. (1967). Correlates of avowed happiness. *Psychol. Bull.* 67: 294-306.

Wingard, D. G. (1980). The sex differential in mortality rates: Biological and social factors. Unpublished doctoral dissertation, University of California, Berkeley.